

Description

DATA CARD CARRIER AND METHOD OF MANUFACTURE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation-in-part application of application serial number 10/037,259 filed December 21, 2001, for DATA CARD CARRIER AND METHOD OF MANUFACTURE.

BACKGROUND OF INVENTION

[0002] In the past few years there has been a major growth in the sale and use of data cards such as pre-paid debit cards and credit cards. Such cards are typically sold at retail outlets and can have a pre-encoded value or may be activated at the retail outlet with a particular value as desired by the consumer. Such cards carry certain encoded data including the value, security coding, etc. Such cards can be used for the purchase of products, services or the like and can be used for such things as phone calling cards. Once the encoded value is fully used, the card no longer

can be used. Such cards can be used as gift certificates or for personal use.

- [0003] One of the problems with such cards is security. That is, people can take certain security information from the cards and obtain products or services therewith. Also, if a card is pre-activated then the cards may be stolen causing loss of revenues to the retail outlet. In order to alleviate the last mentioned problem, it is desired by the retail outlets to activate the card upon purchase which also allows a consumer to determine the exact value of the card. If a card is stolen before activation, the retail outlet only loses its cost of purchasing the card and the display panel the card is typically mounted on.
- [0004] Many patents have been issued relating to such data cards and the assembly of the data cards with the display panels on which they are mounted. Many of these card display assemblies are complicated and expensive to manufacture requiring heavy board stock, expensive gluing and expensive manufacturing machinery to form the card display assemblies. Further, because of the large number of patents, it is often difficult to produce an assembly without the risk of infringement which assembly will also permit inexpensive manufacturing allowing ease of activation

at the point of purchase. Also, at the point of purchase, the ability to expose the data encoding portion of the card which is typically a magnetic strip without taking a significant amount of time on the part of the cashier to remove the card and activate it or otherwise expose the magnetic strip for activation.

- [0005] In order to reduce the costs of the card display assemblies, thinner paper stock and simpler means of applying adhesive to attach a card to a display panel are desirable. Typically, and as taught in numerous of the patents, glue is applied to the display panel and the card is then adhered to the display panel by bonding it to the display panel with the applied glue. A typical glue is a hot-melt glue which permanently affixes the card to the display panel. This requires significant effort in time to remove a card from the display panel and oftentimes leaves a glue residue on the data card upon its removal then requiring effort by the consumer or the cashier to remove the adhesive residue.
- [0006] The application of wet glues and some hot-melt glues to paper stock can result in puckering or other distortion of the paper if the paper stock is not thick. Thus, it would be desirable to provide an assembly which permits the use of

thinner paper stock for the display panel while still allowing adhesive securement of cards to display panels. It would also be desirable to have a structure that allows a card to be removed from the display panel easily, re-mounted thereon if desired and which leaves no adhesive residue on the card.

[0007] Thus, there is a need for an assembly of a display panel and data card which is simpler in construction, more economical to manufacture and simple to activate the card.

SUMMARY OF INVENTION

[0008] The present invention involves the provision of an assembly including a display panel having a data card attached thereto by an attachment device. The attachment device includes adhesive in a layer adhesively secured to one of the faces of a display panel. The data card is releasably secured to an exposed face of the adhesive on the display panel. The adhesive in contact with the data card is a reusable adhesive as it relates to its contact with the data card, is preferably hot-melt and has a lower peel strength with the card than with the display panel.

[0009] The present invention also involves the provision of a method of making a card display assembly comprising a data card mounted on a display panel. The method in-

cludes providing a plurality of display panels and feeding the display panels in sequence to an attachment station wherein adhesive is applied in hot-melt form to an exposed face of the display panel. The data cards may each then be applied to the applied adhesive and a respective display panel either prior to cooling of the adhesive or after cooling or setting of the adhesive. The assembled card display assembly may then be packaged for distribution.

BRIEF DESCRIPTION OF DRAWINGS

- [0010] Fig. 1 is a perspective view of a display assembly comprising a display panel attachment device and card with portions broken away to show details of the various parts.
- [0011] Fig. 2 is a partial sectional view taken along the line 2-2, Fig. 1, with certain portions of the figure shown enlarged to better view the details thereof.
- [0012] Fig. 3 is a schematic illustration of an assembly line to illustrate the method of assembling the card display assembly.
- [0013] Fig. 4 is a perspective view of an additional embodiment of a display assembly comprising of a display panel and attached data storage device shown in phantom to illustrate details of the various parts.
- [0014] Fig. 5 is a partial sectional view taken along the line 5-5,

Fig. 4 with certain portions of the assembly shown enlarged to better view the details thereof.

- [0015] Fig. 6 is a perspective view of an additional embodiment of the invention shown in Figs. 4, 5.
- [0016] Fig. 7 is a schematic illustration of a modified assembly line to illustrate a method of producing the embodiments shown in Figs. 4 – 6.
- [0017] Like numbers throughout the drawings designate like or similar parts as more fully described in the below description of the invention.

DETAILED DESCRIPTION

- [0018] As best seen in Fig. 1, the referenced numeral 1 designates generally a card display assembly for the display and sale of data cards or other data storage devices such as CD's, mini CD's, memory cards, etc. The display assembly 1 includes a display panel 3 having removably mounted thereon a data card 5 (shown in phantom in Fig. 1). The card 5 is mounted to the display panel 3 by an attachment device 7. The attachment device 7 is adhesively bonded to both the card 5 and the display panel 3.
- [0019] The display panel 3 is preferably a paper based material which can be any suitable coated or uncoated paper or paper board having a thickness in the range of between

about 0.003 inches and about 0.048 inches, preferably in the range of between about 0.008 inches and about 0.30 inches and more preferably in the range of between about 0.008 inches and about 0.014 inches. The panel 3 has opposite main surfaces 9 and 10 (front and rear respectively) which in normal use are generally planar and parallel. The surface 9 is adapted for printing of indicia 12 such as advertising material, artistic graphics and/or corporate names and can be printed in color preferably multiple colors as is known in the art. Surface coatings may be applied to the surfaces 9 and 10 to enhance their appearance or to improve their endurance. Such coatings can include clay coatings, polymeric coatings, varnishes, shellacs, etc. as is known in the art. Indicia 12 may be provided as desired by the marketer or retail outlet indicating such things as corporate name, trademarks, marketing materials regarding the card. An opening 14 can be provided adjacent a top edge 15 for displaying the assembly 1 on a display device such as those using pegs and commonly referred to as peg boards.

- [0020] The card 5 has front and back main surfaces 17 and 18 respectively. The card 5 is typically made from a polymeric material such as PVC. Typically the size of such debit and

credit cards is on the order of 2 1/8 inches by 3 3/8 inches. The cards are generally rigid, i.e., do not bend under their own weight. The front surface 17 can have indicia 19 as corporate names, trademarks, marketing information, etc. printed thereon. The back surface 18 typically has a data storage device 20 such as a bar code or a magnetic strip (and herein described as a data area) which contains information about the card, its value, etc. as is well known in the art. The data area 20 is typically located adjacent a bottom edge 22 of the card 5. The surface area of a surface 17 or 18 of the card 5 is typically significantly less than the surface area of a surface 9 or 10 of the panel 3. The area of a surface 9 or 10 is generally at least four times or more larger than the surface area of a surface 17 or 18. The larger size of the display panel allows for effective marketing messages and to allow a consumer to easily locate the card while shopping. The thickness of the card is typically in the range of between about 0.015 inch to about 0.030 inch. The data area 20 generally runs between opposite ends 24 and 26 of the card 5.

[0021] The attachment device 7 includes a polymeric carrier 31 positioned between two layers of adhesive 33 and 35. The carrier 31 can be any suitable polymeric material such as

polyethylene, polypropylene or vinyl. The thickness of the carrier 31 is preferably in the range of between about 0.003 inch and about 0.010 inch and more preferably in the range of between about 0.003 inch and about 0.005 inch. The carrier 31 has opposite surfaces 37 and 38 with each of the surfaces having applied thereto a layer of adhesive 33 or 35 respectively as described below. The length of the carrier 31 is preferably less than the width of the card 5 between the end edges 24 and 26. For example, the length of the carrier can be about 1/2 of an inch less than the width of the card. The height H of the carrier 31 is such that the adhesive can bond the card to the display panel but not adhere to the data area 20. It has been found that a height in the range of between about 1/2 inch and 3/4 inch is acceptable while not requiring high precision location of the card 5 relative to the attachment device 7.

- [0022] Adhesive is applied to each of the surfaces 37 and 38 of the attachment device 7. The adhesive layer 35 is preferably a permanent adhesive, i.e., cannot be reused to read here. In a preferred embodiment, the entire back surface 38 of the attachment device 7 has adhesive 35 on the carrier 31 applied thereto. The adhesive 35 is preferably a

permanent adhesive such as M1270 from Findley. The peel strength of the adhesive 35 to the carrier 31 and the peel strength of the adhesive 35 to the panel 3 preferably exceeds the peel strength of the adhesive 33 to the card 5. Likewise, the peel strength of the adhesive 33 on the carrier 31 also exceeds the peel strength of the adhesive 33 to the card 5. Also, the peel strength of the panel 3 is such that the card 5 will peel from the adhesive 33 before there is a failure in the material of the panel 3 to ensure that the card 5 can be removed from the attachment device 7 while allowing it to be reapplied thereto. The adhesive 33 is preferably a reusable adhesive, such as M1785 from Findley, which prevents removal of the card 5 from the attachment device 7 while allowing the attachment device 7 to remain as a monolithic structure itself and with the panel 3. Removal of the card 5, by the use of a reusable adhesive, allows a card to be removed either for reattachment or for use by the consumer while leaving little or no residue of the adhesive 33 thereon. The attachment device 7 may be provided for the assembly process of the display assembly 1 on an elongate strip as more fully described below.

[0023] Referring now to Fig. 3, the method of manufacturing a

display assembly will be described. An assembly line 50 includes a conveyor 51 adapted to move various components and the various stages of assemblies through assembly stations as hereinafter described. As seen in Fig. 3, the conveyor 51 first accepts panels 3 deposited by a depositor and magazine combination 53. The panels 3 may be indexed at given positions or automatic sensors may be provided downstream to provide for accurate depositing of the various additional components of the display assembly 1 onto the panels 3. The conveyor 51 transfers the deposited panels 3 first to an applicator station 55 operable to deposit attachment devices 7 onto the panels 3. The attachment devices 7 are fed from a roll of carrier stock 57 and are released therefrom and applied to the panel by a blower 59 as is known in the art. Pressure may be applied to the applied attachment device 7 by a pressure-applying device such as a roller 61. The partially assembled display assembly 1 is then transferred to an applicator station 63 which includes a magazine for the cards 5 for the application of the card 5 to the attachment device 7. After application of the card 5, the assembly may then be transferred to a pressure applying device 65 such as a roller to apply pressure to the card to ensure its

adherence to the attachment device 7. Alternatively, the pressure-applying device 61 may be eliminated and only the pressure-applying device 65 used. The assemblies 1 after completion are then transferred to a packaging station 67 for packaging as is known in the art. The thus completed display assemblies 1 as packaged can be then shipped to desired locations.

- [0024] Figs. 4, 5 illustrate a further embodiment of the present invention. The reference number 81 designates generally, a card display assembly for the display and sale of data cards or other storage devices, such as CDs, mini-CDs, memory cards, etc. The display assembly 81 includes a display panel 3 as described above, having removably mounted thereon a data storage device such as a card 5, as described above. The card 5 is mounted to the display panel 3 by an attachment device 87 and is shown in phantom in Fig. 4. The attachment device 87 is adhesively bonded to both the card 5 and the display panel 3. The display panel 3 has opposite main surfaces 9 and 10 (front and rear respectively) which in normal use are generally planar and parallel to one another. The surface 9 is adapted for printing of indicia 12, such as advertising material, artistic graphics and/or corporate names, and can

be printed in color preferably multiple colors as is known in the art. The display panel 3 is described above in detail, which description applies to the embodiment of the invention shown in Figs. 4, 5.

- [0025] The card 5 has front and back main surfaces 17 and 18, respectively. The card 5 is typically made of a polymeric material such as PVC. The card 5 is described in detail above, which description applies to the embodiment of the invention shown in Figs. 4 and 5.
- [0026] The attachment device 87 includes a layer 91 of adhesive. Preferably, the adhesive layer 91 is a single layer in thickness and has an inner surface 94 and outer surface 93 which are preferably generally parallel. The adhesive is preferably a hot-melt adhesive which may be applied as a liquid in a predetermined pattern and shape and may be one continuous layer or alternately may be in multiple spots 92 which spots are shown in phantom in Fig. 4. The adhesive is preferably shrink resistant after cooling and solidifying or setting and is preferably applied in a manner such that the thickness on the display panel 3 is initially in range of between 0.060 inches and about 0.125 inches. In a preferred embodiment the adhesive is extruded in a ribbon having a thickness at the exit of the adhesive deposi-

tor nozzle in the range of between about 0.010 inches and 0.040 inches and preferably in a range of between about .020 inches and .025 inches. By controlling the speed of the display panel 3 relative to the adhesive with the display panel preferably moving slower than the adhesive exiting the depositor nozzle, the adhesive layer on the display panel will thicken to the above described thickness. When a card 5 is applied to the applied adhesive the force used to effect adhesion is adequate to spread the adhesive making the adhesive layer thickness in the range of between about 0.030 inches and about 0.060 inches. It is desired to have the exterior exposed surface 93 with a surface area in the range of between about 0.100 inches and 0.500 inches. Such an area for data cards is approximately 1% to 7% of the area of a main surface 17 or 18 of the card 5. The surface 93 faces generally in the same direction as the surface 9 and preferably generally parallel thereto. The attachment device 87 has a surface portion 94 (or surface portions if it is applied in spots) engaging or adhesively secured to the surface 9. The height H1 of the attachment device 87 is such that the adhesive layer 91 can bond the card 5 to the face 9 but not adhere to data area 20. It has been found that a

height H1 in a range between one-half inch and about three-quarter inch is acceptable while not requiring high precision location of card 5 relative to the attachment device 87.

- [0027] The adhesive layer 91 is formed from an adhesive that is preferably hot-melt and after application and cooling or setting has the reusable or restickable outer surface 93 for attachment of the card 5 to the display panel 3. The adhesive layer 91 at least at its outer surface 93, is pressure sensitive (to effect adhesion of the card 5 to the panel 3) after cooling or setting at the surface 93. The peel strength of the adhesive layer 91 to the surface 9 preferably exceeds the peel strength of the adhesive layer 91 to the card 5. The panel 3 also has sufficient resistance to material separation at the face 9 that the card 5 can be removed from the attachment device 97 while the attachment device 87 remains attached to the face 9. The exposed surface 93 allows the card 5 to be removed and reapplied at least one time. The adhesive of adhesive layer 91 is preferably hot-melt and is reusable after cooling or setting. Such a hot-melt adhesive is 116-69 available from Aabbitt Adhesive Inc. of Chicago Illinois.
- [0028] The above-described differential peel strength may be

achieved advantageously in a simple manner. The adhesive is applied to the surface 9 while at a first temperature which is relatively high which has been found to provide a relative high peel strength. The exposed surface 93 of the adhesive layer 91 is then cooled as by blowing air with a blower 100 across it, e.g., room temperature air. This cooling reduces the peel strength between the card 5 (when applied and adhered) and adhesive layer 91 below that of the peel strength between the adhesive layer 91 and panel 3. The desired degree of peel strength differential may thus be set by adjusting the temperature of the surface 93 prior to attaching the card 5. This method may also be used to provide differential peel strength between two panels 101, 103 of a multi-paneled device 105 such as a data storage device display as seen in FIG. 6. Such a device may be used to store a CD or DVD, not shown. Preferably, the described differential peel strength is at least about 10% and more preferably at least about 25%.

- [0029] The assembly line 50 of Fig. 3, with minor modifications can be also used to produce the second embodiment of the present invention. Such modified line 58 is shown in FIG. 7. However, instead of a roll of carrier stock at 57, that station would include a glue depositor 107 capable of

dispensing adhesive in the desired location and pattern, as described above, to surface 9 as indicated in Figs. 4 and 5. In this embodiment, the pressure-applying device such as the roller 61 may not be needed to apply pressure to the applied attachment device 7 so that this station, or at least its function, could be eliminated. The cards 5 would then be deposited at the applicator's station 63 and the remainder of the process may be the same as that described in the embodiment of the invention shown Figs. 1 and 2. The adhesive depositor at 57 would apply the adhesive to the surfaces 9 of the display panels 3 as they pass thereunder. The data storage device is bonded to the applied adhesive at the station 63 as described above. A pressure roller 65 may be used to ensure attaching of the card 5 to a respective panel 3. The stations 53, 63, 65 and 67 are as described above. The stations 53 and 63 hold a plurality of display panels 3 and cards 5 respectively.

- [0030] This latter embodiment of the invention also includes a method of making the card display assembly 81. Display panels 3 are fed at the feeder station 53 in sequence individually from a magazine containing a plurality of display panels 3. The display panels 3 or device 105 are then fed to an adhesive depositing station designated as 55 in Fig.

3. A hot-melt or liquid adhesive is applied to the face 9 of the display panel 3 or one of the panels 101, 103. Data cards 5 are fed in sequence from a magazine containing a plurality of data cards at applicator 63 and are indexed to each contact a respective attachment member 87 which includes the deposited adhesive layer 91. Preferably, by the time a display panel 3 with adhesive layer 91 thereon reaches the card depositing applicator 63, the adhesive 91 is cooled as with blower 100 or set. However, an internal portion of the adhesive 91 may still be in melted or liquid condition and permanently deformable. The card 5 is brought into contact with the adhesive after cooling with the adhesive having enough tack to hold the card 5 in place and force is applied to effect attachment of a card to the adhesive layer 91 and to make the layer 91 thinner. The thus assembled assemblies 81 may be transferred to subsequent operations such as packaging and subsequent distribution. When a device 105 is made, the panels 101, 103 may be brought together with the attachment device 87 releasably securing them together with one of the panels being permanently secured to the attachment device and the other being releasably secured.

[0031] The present invention provides for flexibility in the as-

sembly of a data storage device display assembly 81. The present invention provides for differential in peel strength, flexibility in operating an assembly line and the ability to handle various materials making up the components of the assembly. The display panel 3 may have a slick finish or porous surface on which the adhesive layer 91 is to be applied. The adhesive may be applied in various formats and shapes for example multiple separate or joined spots, a single spot and in different thicknesses. By using a hot-melt adhesive the viscosity at the time of application can be controlled by control of the temperature allowing variability in its adhesive properties to the card and/or display panel. This allows for the control of the adhesive properties of the card and display panel to the adhesive. Environment temperature around the adhesive layer 91 may be selected to help control adhesion properties. The temperature of the panels 3 and cards 5 may also be adjusted to control adhesion properties. The present invention provides both a simpler structure and a less expensive structure but also a structure that permits control of the properties of the assembly. The present invention also provides for a simple method of controlling the attachment device 87 properties in simple ways i.e.,

the control of the deposited layer in its thickness, size and shape, by simply changing the glue head. This eliminates the need for expensive upstream equipment to make the multi-layer adhesive component described in the above discussed first embodiment of the present invention. The present invention provides an advance in its elimination of component parts while providing flexibility.

- [0032] As is evident from the foregoing description, certain aspects of the present invention are not limited by the particular details of the examples illustrated herein, and it is therefore contemplated that other modifications and applications, or equivalents thereof, will occur to those skilled in the art. It is accordingly intended that the claims shall cover all such modifications and applications that do not depart from the spirit and scope of the present invention.
- [0033] Other aspects, objects and advantages of the present invention can be obtained from a study of the drawings, the disclosure and the appended claims.